论文

利用范本构建语法模板生成仿自然语言隐写文本

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摘要
基于模仿函数的Mimicry文本隐写法利用上下文无关文法(CFG)构造树形结构，生成的含密仿自然文本在语义连贯性方面存在缺陷。该文提出一种改进的Mimicry文本隐写方法，从选择范本和设计语法模板两方面提高语义的连贯性和一致性。经过范本训练，在模板设计中运用置换文本库，考虑文本中各词汇、短语和句子的可置换性。模板还运用Huffman编码，充分考虑语句和词组的出现频度，以改善含密文本的自然度。这样生成的含密文本语义连贯性好，符合自然语言在字符、词汇、句法等方面的统计特性，有利于对抗人工和机器检测。

关键词　　文本隐写　模仿函数　上下文无关文法　语义连贯性

分类号　TP391

CFG-Based Stego-Text Generation Using Template Text and Grammar File

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Abstract
A previous text steganography scheme uses the mimic function and the Context-Free Grammar (CFG) to generate pseudo-natural language text to convey secret information. However, the generated text usually lacks semantic consistency and is therefore vulnerable to human evaluation. An improved mimicry technique is proposed that constructs the CFG-based grammar file from a template text that meets certain criteria so that the generated text is semantically consistent. The grammar file is constructed from a replacement text base composed of many optional words, phrases or sentences. Huffman coding is used to take into account the occurrence frequencies of various words, expressions, and syntactic structures to improve naturalness of the generated text. Thus, in addition to machine examination, the obtained stego-text is able to pass stringent human evaluation.

Key words　Text steganography　Mimic function　Context Free Grammar (CFG) Semantic consistency

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